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Shrinking Budgets and Job Cuts

Science Faces Gloomy Times, A Veteran Insider Warns

Edward E. David Jr., a seasoned veteran of high-level science councils in Washington, left his audience with a bludgeoned feeling September 29 after an address on the future of R&D in the US. A former Bell labs researcher, David, now an independent consultant, served as White House Science Adviser in the Nixon Administration, and subsequently was President of Gould Labs and Exxon Research and Engineering. He has served on many federal advisory committees and headed major studies for the National Academy of Sciences. His remarks were delivered at a seminar of The George Washington University Graduate Program in Science, Technology, and Public Policy, a more or less monthly, informal gathering of science-policy apparatchiks that began 20 years ago, with David, then White House Science Adviser, as the inaugural speaker. The following selection, discussing trends in R&D, is adapted from a speaking outline David provided to SGR.

1. *Corporate central research laboratories will be eliminated.* Corporate research labs are already being viewed as anachronisms, isolated from the critical activities of the corporation. They are expensive and unresponsive. Downsizing has begun. The fundamental question, then, is how new science and technologies will be brought into being. Will there be a larger federal role in this regard, with coupling to industry a critical requirement? The possibilities include opening "windows" on technology through venture activities and joint R&D with small firms. Also, there will be more active "visiting committees" for corporations and corporate "technology clubs."

2. *The total national investment in R&D will shrink by 25 to 30 percent over the next 10 years.* The economy is continuing its movement toward services. Manufacturing, by some measures, is maintaining itself, but employment is becoming service-dominated. Service industries traditionally do little or no R&D. They depend on their suppliers for technology innovations. About 95-plus percent of industrial R&D funds are spent by manufacturing firms or by labs pointed at manufacturing. As innovation in manufactured products and manufacturing employment decline, so will R&D. There are only a few established R&D operations in service industries, for example, Bellcore, the Electric Power Research Institute, and Cable Television Labs.

3. *The federal laboratory system will be reduced to about 30 percent of its present size.* The collapse of the
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A Powerful Role for VP

Clinton Picks Gore to Lead Industrial Technology Drive

In a Clinton Administration, Vice President Al Gore would serve as an unprecedented superchief of government-wide efforts to boost industrial technology. At least \$7 billion would be shifted over three years from defense to civilian R&D programs. And efforts would be made to end the fragmentation of R&D budgets in the Congressional appropriations process.

In addition, the R&D budgets and projects of other nations would be monitored and used as benchmarks "as part of the effort to assess US needs and develop appropriate programs." National labs with industrial capabilities would set aside 10 to 20 percent of their budgets for joint ventures

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In Brief

How often does George Bush meet with his senior science advisory body, the President's Council of Advisers for Science and Technology (PCAST)? Extolling the boss's R&D policies last week at a big Washington conference, White House Science Adviser D. Allan Bromley said, "The President meets with PCAST on a monthly basis, whenever he's in town." White House logs, provided in response to a law suit to compel PCAST to obey the "sunshine" laws, show the following: PCAST has met 25 times since February 1990. Mr. Bush has attended all or part of 7 meetings.

Retiring from Congress and the Chairmanship of the NASA Appropriations Subcommittee, Rep. Bob Traxler (D-Mich.), failed nemesis of the Space Station, noted that Capitol Hill folklore says "the powerful lobbyists are labor, National Guard, environmentalists, consumers, and, yes, veterans groups. I am here to tell you the most powerful lobbying group is now NASA. The other groups... are really just minor league to what the NASA lobby can do."

George Bush's request for resignations from all senior Presidential appointees poses a sensitive issue in science-government relations. The Director of NSF holds a 6-year appointment, with 4 to go, and the occupant is traditionally exempted from resignation requests. The Director of NIH serves at the pleasure of the President, but the post has been considered non-political and Directors have stayed on. However, NIH Director Healy has made herself the most visible ever of NIH chiefs, and is closely identified with the Bush Administration. Biomedical Washington is wondering whether a Clinton Administration would keep her on.

... Shutdowns Coming for NASA, DOE, DOD Labs

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USSR and the demise of nuclear power have robbed many federal labs of their missions. There is every reason to expect shrinkage, despite valiant efforts to convert labs to peacetime activities and to couple them to industrial innovation. There will be political resistance to downsizing, but eventually federal labs will be treated like excess military bases. There will be recommended closings by consensus. Especially vulnerable are labs administered by NASA, DOE, and DOD.

4. Federal research grants will be replaced by contracts with specific deliverables. The ratio of federal R&D contracts to research grants has been growing in both numbers and funding amounts. Targeted R&D is becoming dominant. Peer review is losing credibility as political influences on S&T increase. Reinforcing this trend is the confrontation concerning integrity and misconduct in research. Scientists and engineers have largely lost their credibility as objective advisers and "friends of the court" in Washington. The Defense Advanced Research Projects Agency is the federal model for effective R&D. The dominant mode of operation in DARPA is contracting, not granting. Both industrial and academic institutions participate with DARPA. NSF is making noises about moving in this direction.

5. Strict guidelines for preventing and detecting misconduct in research funded by the federal government will be established. They will be administered by legal mechanisms, inspectors general as auditors and investigators, the Justice Department as prosecutors. Relations between the federal government and research organizations, including academia, are becoming increasingly adversarial. The antitrust suit against MIT, the Ivy League universities, and investigations of 15 others, for setting levels of student financial assistance, indicates the trend. The contention over the definitions of misconduct in science is also indicative. Attitudes among scientists and engineers can aggravate the situation. This matter cannot be swept under the rug. Relations between scientists and engineers and certain administrative people are at a low point. Punitive actions are likely to increase.

6. There will be an increasing oversupply of scientists and engineers in the US resulting in downsizing of academic departments and schools. Despite recent projections of coming shortages, the opposite seems to be in prospect. The number of out-of-work scientists and engineers is increasing. Downsizings and layoffs are likely to continue. There are increasing demands for qualified people in some fields, for example, in environmental measurement and controls and toxicology. Transfer of people hinges on their flexibility and willingness to start new careers. This aspect dominates the conversion to a peacetime economy.

7. Industrial policy will be forthcoming. It will be formulated by the Council of Economic Advisers and Domestic Policy Council. The White House Office of Science and

Technology Policy and the Critical Technologies Institute will play a subordinate role. The policy will be pointed at so-called critical technologies and national needs, and it will be executed by a combination of the Department of Commerce, NSF, NIH, NASA, and two new creations, the National Advanced Research Projects Agency and the Civilian Technology Corporation. Not clear is how this effort will be reconciled with market information and what separation there will be between R&D and commercialization.

8. Technology transfer abroad and joint activities between US and foreign firms will require licensing by the Commerce Department. Protectionism and nationalism are surging around the world, including here. The European Community now knows this all too well. There are proposals to restrict private international dealings, which are burgeoning. The idea of a global economy is questioned because of local effects on jobs and economic development. International consortia and joint activities are not favored by governments because of loss of control.

Conclusion. Hopefully, most of these trends will not go to the extreme end points I have projected. However, several of them are proceeding apace and are driven by strong convictions from managerial and economic forces, not to mention doctrinaire ones. The driving forces surpass science and technology issues and are broad-based in the polity. Yet the issues affect deeply the character and effectiveness of both research and education. Furthermore, the trends call into question several of the standard concepts long held by our community, including the separation of basic and pre-competitive research from development, the ecumenical nature of science, and the self-starting aspect of research. We, as a community, have not yet put forward a comprehensive view of policies responsive to the imperatives behind these rather worrisome and sinister trends.

We should confront these matters and make some definitive statements on which policies can be based. Needed are mechanisms which address the larger issues beyond science and technology, but which themselves are influenced by science and technology. Perhaps a new policy mechanism in the White House of broad scope could accomplish this end. So far, there is no sign of that, but the transition to a new Administration provides an opportunity.

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Editor and Publisher
Daniel S. Greenberg

Associate Publisher
Wanda J. Relf

Circulation Manager
Glen D. Grant

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... Technology Emphasized, As Science Gets a Nod

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with industry. A nationwide network of technology-extension centers would be established to assist manufacturing firms. And billions of dollars would be invested in a National Research and Education Network for telecommunications—strongly advocated by Gore in the Senate.

These and other intentions are spelled out in a broad-brush paper, "A National Technology Policy for America," released September 21 by the Clinton campaign. Though clunkily written and often vague, like much campaign literature, the Clinton manifesto is a distillation of numerous blue-ribbon pleadings in recent years for a massively enlarged federal role in the financing and promotion of civilian technology. It reflects a consensus that stretches from Capitol Hill to Silicon Valley, with strong support in between from aerospace and other high-tech industries, academe, and organized labor.

Assuming a Clinton victory, the paper portends quick acceleration of the already ongoing shift of federal attention and resources from science to technology.

The drafting of the paper was assisted by customarily Republican chieftains of high-tech industry who have jumped ship and signed on with the Democratic candidate. Congressional staff members versed in science and technology issues also chipped in, as did officials of the private Council on Competitiveness. These include former NSF Director Erich Bloch, a Distinguished Fellow of the Council and apostle of a bigger government role in technology. Bloch told SGR that he and colleagues at the Council have made their views known to Clinton, Bush, and Perot and have performed no special service for any of them. But Clinton campaign aides say their assistance went far beyond providing copies of the Council's published reports on high-tech salvation.

The Vice Presidential assignment as impresario of federal technology is a Clinton touch in the tradition of finding work for an office with few duties. However, the assignment fits Gore, who has displayed a keen interest in science and technology ever since he was elected to the House in 1976. He sought appointments to the science committee there and later in the Senate, and as a subcommittee chairman in both, displayed rare diligence in exploring a variety of issues at marathon hearings that usually wearied colleagues and staff.

Stating that the fruits of American scientific eminence are easily picked up by other nations, while foreign manufacturing prowess can only be slowly emulated, the Clinton paper says: "Science policy alone does not address these issues. In essence, science policy is a supply-push policy in which the government supports science education, basic research and some applied R&D that relates to specific national missions.... Technology policy picks up where science policy leaves off. It is not limited to just research and development. It also focuses on the rapid application of new ideas."

Caustic View of NSF Future

In support of its deliberations, the Commission on the Future of the National Science Foundation has invited scientists to express their views. The following, condensed by SGR from a letter to the Commission by Philip Siekevitz, Professor emeritus, Rockefeller University, reflects widely held concerns about the fate of NSF in a political milieu favoring industrial technology. Siekevitz, a biochemist, was elected to the National Academy of Sciences in 1975 and has served on NSF and NIH advisory panels.

To me, it is all very simple ... "Who pays and who gets the benefits?" It seems to me that the future which is projected for NSF is a not-so-thinly disguised attempt to bring in scientists to work for the goals of industry. The work of these scientists will be paid for by the taxpayer; industry will pay nothing but will reap the results. Thus, this proposal is nothing less than a free ride for industry, a subsidy disguised as a program.

More to the point, the projected role for the NSF is a cover-up for the obvious: namely, that industry sets its own aims, priorities, and goals, and the NSF follows along. But is what is good for Motorola necessarily good for our country? [ed. note: Robert Galvin, former CEO and now Chairman of the Executive Committee of Motorola, co-chairs the Commission with William Danforth, Chancellor of Washington University.]

The 1950 NSF statute states that its chief goals should be "to promote the progress of science, and to advance the national health, prosperity, and welfare." The proposed change in the goals of NSF goes away from the promotion of science, for it ties basic scientific research to industrial endeavors, not to the goals of research *per se*. It will retard the national health, prosperity, and welfare, for it implies that these goals can be met by industrial management, a management which has given us the sorry state of the American economy today.

The Clinton manifesto acknowledges the importance of basic research, but suggests that science has been reasonably well cared for by Washington, while technology for commercial advantage has been neglected. "The absence of a coherent technology policy," the paper states, "is one of the key reasons why America is trailing some of its major competitors in translating its strength in basic research into commercial success, and why America is losing its lead in technology."

Noting that "University research accounts for a large part of the federal basic research budget," the paper states

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... Talks With Computer CEOs Led to Policy Paper

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that "Funding for basic university research should continue to be provided for a broad range of disciplines, since it is impossible to predict where the next breakthrough may come. While maintaining America's leadership in basic research, government, universities and industry must all work together to take advantage of these new breakthroughs to enhance US competitiveness."

The projected role for Gore is only lightly sketched, but the few words devoted to the subject pledge the creation of an unprecedented government power center devoted to technology.

A summary attached to the Clinton paper states: "I will give our Vice President Al Gore the responsibility and authority to coordinate the Administration's vision for technology and lead all government agencies, including research groups, in aligning with that vision."

The paper itself fleshes this out, stating: "The Vice President will take on the task of organizing all facets of government to develop and implement my Administration's technology policy. As a first step, he will establish a central focus for the coordination of government activities related to civilian technology and create a forum for systematic private sector input into US government deliberations about technology policy and competitiveness."

Regarding the existing Executive Branch agencies for managing this area, the White House Office of Science and Technology Policy and the Federal Coordinating Council for Science, Engineering, and Technology (FCCSET), the Clinton paper says they will "play an important role in coordinating policy and enhancing cooperation between the private and public sectors. We will significantly strengthen both of these organizations," the paper adds. But the only specifics offered are the monitoring of critical technologies and more "collection and dissemination of foreign scientific and technical information."

Listing "obstacles to close government-industry interaction," the policy paper states that "the diffused nature of government technology programs, which span many departments and agencies, makes them hard to coordinate and manage." It then observes that FCCSET "lends itself to planning these programs, but not to managing them." Without further mention of the technology-management issue, the statement then assails the Federal Advisory Committee Act and the Freedom of Information Act—so-called sunshine laws—for "giving foreign competitors immediate access to sensitive material." It adds that conflict-of-interest regulations, though well-intentioned, "inhibit the participation of knowledgeable private-sector individuals in government discussions about how to strengthen America's competitive position in crucial technologies."

Throwing these sops to industry's aversion to public disclosure of its dealings with government, the Clinton paper says, "These issues must be addressed to make sure

that government technology programs are responsive to private-sector needs."

Without specifying whether a new agency for industrial technology would be created, as has often been suggested, the Clinton paper pledges establishment of "a civilian research and development program to support research that will launch new growth industries and revitalize traditional ones." The often-called-for civilian DARPA is not mentioned.

Noting the fragmentation of R&D budgets and legislative authority among numerous Congressional committees, Clinton said he would "work with Congress to review the way it handles the budget process," which now "makes it nearly impossible to set priorities among competing programs or make tradeoffs among related activities."

Jealous guarding of Congressional jurisdictions has until now put this reform beyond reach. But with about one-fourth of the House membership due to turn over in this election, and many seats changing in the Senate, the rules governing Congress are unusually ripe for change.

Parts of the policy statement quote from or closely parallel recent reports of the private Council on Competitiveness, a Washington-based consortium of high-tech firms and research universities. The Council, not to be confused with Vice President Dan Quayle's regulation-bashing shop that bears the same name, is well connected to Washington's sci/tech power centers, in the Bush Administration and on Capitol Hill.

The Clinton camp says that in addition to former NSF Director Bloch, those who provided suggestions for the technology paper included Kent Hughes, President of the Council, and Daniel F. Burton Jr., Executive Vice President. At one point, the Clinton paper quotes a warning of US technological erosion in a recent report by the Council, *Gaining New Ground: Technological Priorities for America's Future*. At another point, without attribution, it echoes a suggestion from another report by the Council, *Industry as a Customer of the Federal Laboratories*. In that report, the Council recommended a 3-5 year trial period for reorienting Pentagon and Department of Energy labs to civilian needs, with their funds to be redeployed elsewhere if they "have not made a significant contribution to America's industrial technology needs."

The genesis and refinement of Clinton's technology paper reflects the candidate's broad appeal in high-tech circles. As pieced together by SGR, the process began last spring when Clinton met in Silicon Valley with several industrial leaders, including Lawrence Ellison, CEO of the Oracle Corporation; Richard Brass, President of a subsidiary firm, Oracle Publishing, and David Barram, a Vice President of Apple Computer.

After a discussion of technology issues, Clinton asked them to summarize their views in writing. Early in August,

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Bush's Response to AIDS: Magic Was Half Right

Resigning from the National Commission on AIDS, Magic Johnson accused the Bush Administration of doing close to nothing about the disease. The White House responded that he doesn't know what he's talking about. What's the truth?

The answer is that the Administration has put a great deal of money into AIDS research. But, ever-sensitive to the moral taint that the political right ascribes to AIDS, it has opposed preventive measures that are indispensable for slowing the spread of AIDS. The difference is that research on cells and blood does not arouse sanctimony and thus has remained safe from political fire. Without a cure or vaccine for AIDS on hand or in sight, prevention, primarily through education and use of condoms and needle exchanges, is the only effective weapon now available. On that score, Johnson is right: the Bush Administration is a failure.

The charges and countercharges over money for research are a sham, since the amounts voted by the Democratic Congress have always been fairly close to the amounts proposed by the White House. Whether good use could be made of more research money is debatable. In the US and worldwide, a great mobilization of scientific talent is at work on the disease. Some researchers even whisper that the field is awash with money and that second raters are clogging up the system.

The first Bush budget, for fiscal year 1990, was an

inheritance prepared by the outgoing Reagan Administration. According to budgetary practice, the AIDS account combines research with prevention, though research gets the lion's share and is pursued with most vigor. For the two activities, the budget called for \$1.6 billion, a 24-percent increase over the previous year's spending, an enormous jump in a tight budget year. The amount voted by Congress that year was actually a few million short of the Presidential request.

In fiscal 1991, Bush asked for \$1.7 billion for research and prevention; Congress appropriated \$1.9 billion. For fiscal 1992, which ended on September 30, Congress appro-

The government's fiscal record on AIDS is concisely reported in *Federal Funding for AIDS Research and Prevention FY 1981-93* (92-328 SPR; 23 pp., no charge), available from: Library of Congress, Science Policy Research Division, Mail Code 7490, Madison Building, Washington, DC 20450; attn. Ms. Raap; tel. 202/707-7014.

riated just a few million more than the \$1.95 billion requested by the White House. Thus, the record shows that on money for AIDS research, the Democratic Congress and the Republican White House are essentially in harmony.

The big differences concern visible presidential commitment and how far the government should go in attempting to alter risky behavior that can bring exposure to AIDS. Here, Magic Johnson had it right when he resigned from the AIDS Commission, telling Bush—who had appointed him—that he and the other members “have been increasingly frustrated by the lack of support, and even opposition, of your administration to our recommendations.”

In a harsh critique issued in June, the commission had noted that Bush had devoted only one speech to the AIDS epidemic since taking office, adding, “He has given no emphasis to AIDS in his legislative proposals to Congress, and has signalled no sense of urgency to either the American people, or to his own domestic policy experts.”

The warning literature that the federal government produces on AIDS has been rightly criticized as too prissy and obscure to convey a true picture of risks and how to avoid them. Sexual candor, accompanied by condom distribution in the schools, is highly rated by public health workers as an essential tactic. But not so by the Bush camp, which tends to favor abstinence as the proper method of AIDS avoidance for teen-agers. The Administration's abhorrence of straight talk on AIDS has even led to the scuttling of a planned survey of teen-age sexual practices. This is a subject on which little is known beyond the fact that a good deal of activity is in progress, as evidenced by pregnancy and venereal-disease rates.

Magic got it only half right when he said the Bush Administration is doing nothing about AIDS. By any measure, however, the failings are tragic and needless.—DSG

Clinton Technology Policy

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Clinton discussed their ideas at a dinner with Brass and Barram, John Young, CEO of Hewlett-Packard and former Chairman of the private Council on Competitiveness, and John Scully, CEO of Apple Computer. They agreed on the desirability of drafting a technology position paper, and Kent Hughes, President of the Council on Competitiveness, was asked to carry out the assignment. He did so in a personal capacity, in collaboration with colleagues Burton and Bloch. The work was circulated to some 20 CEOs.

The draft was also reviewed on Capitol Hill by several senior staff members seasoned in science and technology issues, including: Patrick Wyndham, of the Subcommittee on Science, Technology, and Space, chaired by Gore; Ed McGaffigan, technology specialist for Jeff Bingaman, the Senator from Los Alamos-Sandia, and Radford Byerly Jr., Chief of Staff of the House Science, Space, and Technology Committee. The paper was then put in final draft by Ellis Mottur, formerly of the Senate Labor and Human Resources Committee staff, now on the Clinton-Gore campaign staff as Director of Business and High-Tech Constituencies.

Clinton reviewed the final draft, but not Gore, who was tied up on the campaign trail. A near-final version of the paper was given to some 30 high-tech executives who publicly endorsed Clinton at a meeting in Silicon Valley on September 15.—DSG

Scientists Council for Clinton-Gore: The Full Roster

A last-minute report in SGR October 1 noted the creation of the Council of Scientists and Engineers for Clinton-Gore, but because of space limitations, listed only a handful of the 64 members. The Council is chaired by Marvin Goldberger, former President of Caltech and the Institute for Advanced Study, Princeton, now at UCLA, and co-chaired by Nobel Physicist Leon Lederman and MIT Professor Sheila Widnall. No comparable Republican assemblage has surfaced. Following is the full roster of the Clinton-Gore group.

| | |
|--------------------------------|---------------------------------|
| Philip Anderson, Princeton | Donald Hornig, Harvard |
| Fred Anson, Caltech | Leon Lederman, Fermi Inst |
| Richard Atkinson, UC,SD | Yuan Lee, UC, Berkeley |
| Francisco Ayala, UC, Irvine | Francis Low, MIT |
| John Bahcall, Inst. Adv. Study | Gordon MacDonald, UC, SD |
| Jacqueline Barton, Caltech | Shirley Malcom, AAAS |
| Paul Berg, Beckman Center | Mario Molina, MIT |
| Lewis Branscomb, Harvard | Arno Penzias, AT&T Bell Labs |
| Harold Brown, Johns Hopkins | William Perry, Los Altos, Cal. |
| George Campbell, NACME | Ben Rich, Burbank, Calif. |
| Kenneth Case, Rockefeller U. | Sally Ride, UC, San Diego |
| Jewell Cobb, Calif. State, LA | Harold Rosen, Hughes Air. |
| Robert Conn, UCLA | Walter Rosenblith, MIT |
| James Cronin, Fermi Inst. | Marshall Rosenblith, UC, SD |
| Peter Dervan, Caltech | Sherwood Rowland, UC, Irv. |
| John Deutch, MIT | John Rubel, Tesuque, NM |
| Sidney Drell, SLAC | Carl Sagan, Cornell Univ. |
| Paul Ehrlich, Stanford Univ. | Steven Schneider, Stanford |
| David Eisenberg, UCLA | Robert Schrieffer, Fla. State |
| Mostafa El-Sayed, UCLA | Lucy Shapiro, Stanford Univ. |
| Mary Gaillard, UC, Berkeley | Melvin Simon, Caltech |
| Ted Geballe, Stanford Univ. | Timothy Springer, Harvard |
| Murray Gell-Man, Caltech | Charles Townes, UC, Berk. |
| Robert Ginsburg, U. of Miami | Harold Varmus, UC, S.F. |
| Marvin Goldberger, UCLA | Warren Washington, NCAR |
| Kurt Gottfried, Cornell Univ. | Steven Weinberg, U. of Texas |
| David Gross, Princeton | Albert Wheelon, Los Angeles |
| Christopher Harrison, U Miami | Sheila Widnall, MIT |
| Dudley Herschbach, Harvard | Jerome Wiesner, MIT |
| John Holdren, UC, Berkeley | Frank Wilczek, Inst. Adv. Study |
| Leroy Hood, Caltech | Clifford Wing, Duke U. |
| John Hopfield, Caltech | Herbert York, UC, San Diego |

Boost for Small Business R&D

Just before going home, Congress renewed and greatly expanded the decade-old Small Business Innovation Program (SBIR), setting it on a course that will raise its annual expenditures to \$1.2 billion a year by 1997. The downside is that the money, awarded to help small firms develop new products, comes out of the budgets of all federal research agencies. Under the legislation, the involuntary tithing will rise from the current 1.25 percent to 2.5 percent of research budgets. The size of the awards has also been increased, from \$25,000 to \$50,000 for the initial phases of research, and from \$500,000 to \$750,000 for advanced work. The program is popular, but evidence of value is scanty.

NIH Applicants Doing Better, New Grant Statistics Show

The latest data from the National Institutes of Health portray the odds for success in the NIH granting system as relatively low, but climbing up from the depths.

The numbers, compiled by the NIH Division of Research Grants (DRG), extend to fiscal 1991—which ended September 30, 1991. They are reported in the October issue of *NIH Peer Review Notes*, the DRG's now-and-then newsletter for reviewers of NIH grant applications and other consultants.

Noting a "considerable improvement" in success rates for obtaining NIH awards, the DRG reports that the FY 1991 figure stood at 29.3 percent, a 5.3-percent increase over 1990—the low point for the decade. The high was in 1987, when success rates reached 34.8 percent.

In explaining the slump, the report says that in the 1980s, NIH became heavily mortgaged with longer awards. "In FY 1982, 18 percent of competing projects were awarded for 5 years or more, rising to nearly 60 percent in FY 1990. As larger portions of the NIH research budget were devoted to noncompeting continuations, less money was available for competing projects."

Despite low success rates, the DRG reports that "new investigators continue to compete successfully for their first grant support," with half of all applicants receiving "some form of support" within five years of their initial application. Among those who do receive support, "Approximately 90 percent receive their first NIH award within five years of submitting their initial application."

In 1970, the comparable figure was 85.7 percent. The rates vary widely, however, the DRG points out, noting that "two people who received their initial awards in fiscal 1990 had first applied for support in FY 1970." Who they are and how they survived are not revealed.

The report says there are "many misconceptions" concerning how different disciplines fare in the NIH grants competition. Biochemistry was tops in FY 1991, with a 34.4-percent success rate in schools of medicine, 37.4 in other parts of academe. Psychology, chemistry, and physiology all scored over 30 percent. Departments of medicine were the biggest recipients of NIH funds—over \$1 billion in FY 1991, 15.7 percent of all extramural funding.

The report does not extend to the fiscal year just ended, FY 92, nor does it cover the standstill budget that Congress passed for FY 1993 before the recent adjournment.

The statistics in *NIH Peer Review Notes* were selected from the forthcoming edition of NIH's big book on grants, budgets, success rates, etc., *NIH Extramural Trends: 1982-91*, due in November. Both publications are available without charge from: NIH, Division of Research Grants, Westwood Building, Room 449, Bethesda, Md. 20892; tel. 301/496-7441.

More IN PRINT: Genome, Aeronautics, Genetics

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"Korean Science Institutions," and an "Assessment of Carbon Composite Research in the Far East."

Order from: Office of Naval Research, Asian Office, Unit 45002, APO AP 96337-0007.

European Science Notes, from ONR's London office (approximately bimonthly, no charge), covers Europe and the Middle East with the same types of articles as the ONR Asian publication.

Order from: Office of Naval Research, European Office, PSC 802, Box 39, FPO AE 09499-0700.

Human Genome: 1991-92 Program Report (248 pp., no charge), from the Department of Energy, NIH's partner in the genome project, summaries of DOE's involvement, which is booming, even in these hard times. As noted in the report, the 1989-90 edition listed 57 abstracts reflecting the work of 211 scientists. Comparable figures, 1991-92: 150 abstracts and over 400 scientists. An appendix to the report includes a nicely done "Primer on Molecular Genetics."

Order from: Oak Ridge National Laboratory, PO Box 2008, attn. Betty Mansfield, Oak Ridge, Tenn. 37831-6050; tel. 615/576-6669.

Aeronautical Technologies for the Twenty-First Century (summary, 21 pp.; full report, 295 pp.), from the National Academy of Sciences Aeronautical and Space Engineering Board, a call for the National Aeronautics and Space Administration and other federal agencies to increase support for aeronautical research—the underpinnings of a major but eroding national asset, says the report, prepared by a committee chaired by Eugene Covert, MIT Professor of Aeronautics and Astronautics.

Orders: The summary (no charge) is available from: Aeronautics and Space Engineering Board, National Academy of Sciences, 2101 Constitution Ave. NW, Washington, DC 20418; tel. 202/334-3267. Full report (\$38) from: National Academy Press, 2101 Constitution Ave. NW, PO Box 285, Washington, DC 20418; tel. 1-800/624-6242; in the Washington, DC area: 202/334-3313.

Employment and the US Mathematics Doctorate: Report of the AMS Task Force on Employment (22 pp., no charge), from the American Mathematical Society, which reports that underemployment of mathematicians distorts the seemingly low 5 percent unemployment rate recorded last March among 1990-91 new doctorates. The foreseeable future doesn't look any brighter, says the report, which recommends a number of measures, including more post-doc positions and employment of mathematicians in non-traditional fields, such as curricular reform and corporate work.

Order from: James Maxwell, Associate Executive Director, American Mathematical Society, PO Box 6248, Providence, Rhode Island 02940-6248; tel. 401/455-4000.

Genetic Counseling and Cystic Fibrosis Carrier Screening: Results of a Survey (GPO Stock No. 052-003-01305-3; 49 pp., \$3.50), by the Office of Technology Assessment, based on questionnaires sent to 431 genetic counselors and nurse geneticists to assess their practices and attitudes in screening for cystic fibrosis. Among the findings: 53 percent "believe that CF carrier tests should only be offered to individuals with a positive family history of CF and not to those with a negative history. Twenty-one percent felt that CF carrier tests should be offered to individuals with no family history." The survey was conducted as part of a recently published OTA study: **Cystic Fibrosis and DNA Tests: Implications of Carrier Screening** (GPO Stock No. 052-003-01291-0; 308 pp., \$16).

Also from OTA: **Difficult-to-Reuse Needles for the Prevention of HIV Infection Among Injecting Drug Users** (GPO Stock No. 052-003-01307-8; 17 pp., \$1.75), concludes that new designs make reuse difficult but not impossible. This is the ninth in OTA's series on HIV-related issues, all listed in this report.

Federal and Private Roles in the Development of Alglucerase Therapy for Gaucher Disease (GPO Stock No. 052-003-01309-6; 34 pp., \$2.75), examines issues posed by a drug, developed with extensive NIH support, that could have annual costs per patient as high as \$500,000. OTA observes that the government has no means to assure that the price of drugs "reflects the public's contribution to their development," adding that "cost considerations cannot be ignored in the development and diffusion of any treatment."

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IN PRINT: State R&D, Women's Health, Fluoridation

The publications listed are obtainable as indicated—not from SGR.

Science, Technology, and the States in America's Third Century (73 pp., no charge), a review of the expanding role of the states in supporting and applying science and technology, produced for the Carnegie Commission on Science, Technology, and Government by a group chaired by former Ohio Governor Richard Celeste, an early supporter of state S&T programs. Among the recommendations: closer linkage of state, federal, and industrial S&T activities, creation or strengthening of state S&T advisory mechanisms, and establishment by the states of an organization to coordinate S&T activities and represent them on the national scene. The report was released and discussed September 30 at a hearing of the Congressional Joint Economic Committee, thus eluding the oblivion common to its ilk.

Order from: Carnegie Commission on Science, Technology, and Government, 10 Waverly Place, New York, NY 10003; tel. 212/998-2150.

Overview: Office of Research on Women's Health, National Institutes of Health (10 pp., no charge), skimpily describes the fastest-growing and most politically visible program at NIH, the Women's Health Initiative, a top priority of NIH Director Bernadine Healy, who last week beat the drums for the program at a well-attended luncheon on Capitol Hill. The event included a plea for cancer research by Pierce Brosnan, a popular actor whose wife died last year of ovarian cancer. Healy noted the recent award of a \$140 million, 15-year contract to the Fred Hutchinson Cancer Research Center, Seattle, which will serve as the clinical coordinating center for a nationwide network that will ultimately include 45 centers—the first 15 to be named early next year.

Order from: Office of Research on Women's Health, NIH, Building 1, Room 201, Bethesda, Md. 20892; tel. 301/402-1770.

Opportunities for Research on Women's Health (92-3457; 34 pp., no charge), summary report of an NIH-sponsored conference, at Hunt Valley, Md., September 1991, includes data on women's mortality and morbidity and recommendations of working groups on reproductive biology, aging processes, malignancy, and other topics. Included are statements by Director Healy and Vivian Pinn, Director of the Office of Research on Women's Health.

Order from: Prospect Associates, 1801 Rockville Pike, Suite 500, Rockville, Md. 20852; attn. Conference Department; tel. 301/468-6338.

Federal Research: System for Reimbursing Universities' Indirect Costs Should be Reevaluated (GAO/RCED-92-203; 47 pp., no charge), by the General Accounting Office (GAO), investigative service for Congress, respond-

ing to an assignment by Rep. John Dingell, whose inquiries into indirect costs toppled Stanford President Don Kennedy and sent dozens of institutions hurrying to reimburse for overpayments even before the feds arrived to check their books. While noting that the Office of Management and Budget, the fount of overhead ground rules, is orchestrating yet another interagency study of the tangled system, GAO focuses on one basic fix: designation of a single agency to negotiate cost rates, a task now shared by the Department of Health and Human Services and the Office of Naval Research. Each has its own criteria, GAO notes, and they lead to differing outcomes, with ONR's rates running nearly one-fifth higher than HHS'. The report suggests consideration of several alternatives, including flat rates for reimbursement, and urges OMB to include university representatives in its deliberation.

Order from: USGAO, PO Box 6015, Gaithersburg, Md. 20877; tel. 202/275-6241.

Fluoridation of Public Drinking Water: Issues of Health Benefits and Risks (92-681 SPR; 28 pp., no charge), from the Congressional Research Service (CRS), part of the Library of Congress, a review of literature concerning the safety, risks, and health benefits of fluoridation of water supplies, with CRS concluding that the overwhelming weight of scientific opinion favors the practice. The report states that the anti-fluoridation movement "has found supporters in advocate groups supporting protection of the environment" and that "some individuals in government health agencies have claimed that there has been a deliberate effort to cover up or gloss over evidence implicating artificial fluoridation as a cause of cancer and other illnesses." The authors of the report, Christopher H. Dodge and Mary Tieman, note that Congress hasn't touched the fluoridation issue since 1977, when hearings were held on carcinogenicity of fluoridated water. "It is possible," they add, that the next Congress may hold hearings on a 1990 report by the National Toxicology Program, *Toxicology and Carcinogenic Studies of Sodium Fluoride*.

Order from: Library of Congress, Science Policy Research Division, Mail Code 7490, Madison Building, Washington, DC 20540; attn. Ms. Raap; tel. 202/707-7014.

Scientific Information Bulletin (quarterly, no charge), from the Tokyo branch of the US Office of Naval Research (ONR), the US government's longest-running above-board monitor of research abroad. A hefty publication (249 pp. in the latest issue), it contains reports by ONR staff members on science and technology in Japan, South Korea, and other Asian nations. A representative sampling of contents includes articles on Japan's "Electronic Dictionary Research Institute," the "Supercomputing Japan '92 Conference,"

(Continued on Page 7)

